

MCQs

1. The removal of apex releases the lateral buds from the apical dominance. It is:

(A) Inhibitory effect (B) Apical dominances (C) Reproduction **(D) Compensatory**
2. Primary growth in plants is caused by :

(A) Lateral meristem **(B) Apical meristem**
(C) Intercalary meristem (D) Rib meristem
3. How many folds , cell volume , increase during elongation due to uptake of water:

(A) 120 **(B) 150** (C) 130 (D) 180
4. During elongation the cell volume increase up to:

(A) 150 fold (B) 50 fold (C) 100 fold (D) 200 fold
5. Secondary growth leads to an increase in the diameter of the:

(A) Stem **(B) Stem and Root** (C) Root (D) Leaf
6. Apical dominance is caused by :

(A) Gibberllins (B) Cytokinins **(C) Auxins** (D) Ethene
7. Apical meristems are present in :

(A) Vascular cambium **(B) Shoot and root tips**
(C) Stem nodes (D) Corks ambium
8. The negative physiological changes in our body are said to be:

(A) Maturation **(B) Aging** (C) Childhood (D) Death
9. Fertilization is the process which leads to the union of :

(A) Individuals (B) Sperms **(C) Gametes** (D) Eggs
10. A plant has a growth pattern called?

(A) Growing point (B) Meristem (C) Apical meristem **(D) Open growth**
11. Cleavage results in the formation of rounded closely packed mass of blastomeres , known as :

(A) Blastulla **(B) Morulla** (C) Gastrula (D) Neurula
12. The germ layers are formed during.

(A) Cleavage (B) Organogenesis **(C) Gastrulation** (D) Growth
13. Blastomeres are formed during.

(A) Morulla (B) Cleavage (C) Gastrulation (D) Fertilization
14. Somites are formed and organized by:

(A) Ectoderm **(B) Mesoderm** (C) Endoderm (D) Blastoderm
15. Immediately after fertilization, the egg undergoes a series of mitotic divisions called?

(A) Morulla (B) Gastrulation **(C) Cleavage** (D) Blastulla

16. During gastrulation the clastoderm splits into two layers, an upper layer of cell is called?
(A) Hypoblast (B) Area pellucida (C) **Epiblast** (D) Area opaca
17. The shell, over thick egg, is secreted as it passes through.
(A) Ovary (B) **Oviduct** (C) Uterus (D) Cloaca
18. The mesodermal cells do not invaginate but migrate medially and caudally from both sides and create a midline thickening called?
(A) Hensen's Node (B) **Primitive streak** (C) Epiblast (D) Hypoblast
19. The cavity formed between somatic and splanchnic mesoderm is:
(A) Archenteron (B) **Coelom** (C) Hensen's node (D) Neurocoel
20. Apical dominance is caused by :
(A) 23 hours (B) **24 hours** (C) 22 hours (D) 21 hours
21. The discoidal cap of cells above the blastocoel is called:
(A) **Blastoderm** (B) Ectoderm (C) Mesoderm (D) Endoderm
22. Clear cytoplasm in an Ascidian zygote produces.
(A) Muscles cell (B) **Larval epidermis** (C) Gut (D) Notochord
23. Grey vegetal cytoplasm gives rise to :
(A) Neural tube (B) Notochord (C) Muscle cell (D) **Gut**
24. Negative physiological changes in our body are called?
(A) Degeneration (B) **Ageing** (C) Abnormalities (D) Regeneration
25. The unspecialized cells present in flatworms and planaria are:
(A) Chondrocytes (B) Osteoclasts (C) **Neoblasts** (D) Osteoblasts
26. The branch of biology which deals with the study of abnormal development and their causes is called?
(A) Gerontology (B) **Teratology** (C) Embryology (D) Microcephaly
27. The condition in which an individual has small skull is termed as:
(A) Harelip (B) **Microcephaly** (C) Diabetes (D) Epilepsy
28. The human life is judged to be maximum of :
(A) **120 - 125 years** (B) 70 - 100 years (C) 60 - 70 years (D) 130 - 135 years
29. Environmental factors causing abnormal development are grouped together as:
(A) Toxins (B) Carcinogens (C) **Teratogens** (D) Mutagens
30. The branch of biology which deals with abnormal development is called?
(A) Mythology (B) Gerontology (C) Palaeontology (D) **Teratology**
31. Which of the following chromosomal abnormalities lead to tallness, aggressiveness, mental defect and anti-social behavior?
(A) **XYY** (B) XXY (C) XO (D) XXXY
32. Clear cytoplasm, in an ascidian zygote produces.

- (A) Muscle cells (B) Notochord **(C) Larval epidermis** (D) Gut

33. In ascidian fertilized egg, yellow cytoplasm gives rise to:

- (A) Gut **(B) Muscle cells** (C) Larval epidermis (D) neural tube

34. Gray equatorial cytoplasm gives rise to:

- (A) Neural tube **(B) Gut** (C) Larval epidermis (D) Muscle cells

35. Somites are formed and organized by:

- (A) Ectoderm **(B) Mesoderm** (C) Endoderm (D) Blastoderm

36. Hypoblast is mainly presumptive.

- (A) Ectoderm **(B) Endoderm** (C) Mesoderm (D) Blastoderm

37. Growth rate is influenced by:

- (A) Hormones (B) Water (C) Vitamins **(D) All of these**

38. Neurula is the stage in which embryo has:

- (A) Neural tube** (B) Blastocoele (C) The germ layers (D) Archenterons

39. The mesodermal cells do not invaginate but migrate medially and caudally from both sides and create a midline thickening called?

- (A) Hensen's node **(B) Primitive streak** (C) Epiblast (D) Hypoblast

Fill in the blanks.

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- The influence of notochordal cells on the ectodermal cells to become nervous system was called.....
- is a condition in which individuals have small skull.
- Growth is accompanied by two factors. by increase in increase in
- are the regions where growth is initiated by the proliferation of cells.

Answers

- | | |
|-----------------------------------|-----------------|
| 1. Embryonic induction | 2. Microcephaly |
| 3. Number of cells, Size of cells | 4. Meristem |

Chapter : 19

Growth and Development Short Questions Answers

1. **What are growing points?**

Ans: In higher plants, growth is limited to certain regions known as growing points e.g., shoot apex and root tip.

2. **What is secondary growth?**

Ans: The growth of secondary tissues i.e., secondary xylem and phloem, by the intercalary or vascular cambium leading to increase in thickness **is called** secondary growth.

3. **Name the factors by which rate of growth is influenced?**

Ans: The growth rate is influenced by number of factors both external and internal. External

factor are temperature, light, oxygen, carbon dioxide, etc. While internal factors are hormones, water, vitamins etc.

4. **What is correlation?**

Ans: The development of a plant is usually correlated with its growth and different organs grow at different rates in different directions and the development of different parts takes place, such reciprocal relationship is **known as correlation**.

5. **What is embryology?**

Ans: Embryology is the study of growth and differentiation undergone by an organism in the course of its development from a single fertilized egg into highly complex and an independent living being like his parents.

6. **What is discoidal cleavage?**

Ans: In bird's egg the process of cell division is confined to the small disc of protoplasm lying on the surface of the yolk at the animal pole. This type of cleavage is referred to as discoidal cleavage.

7. **What is the role of cytokinins in apical dominance?**

Ans: Cytokinins play important role in apical dominance and in many cases if cytokinins is applied directly on the inhibited bud, it allows lateral buds to be released from apical dominance.

8. **Which process is defined as negative physiological changes?**

Ans: Aging can be defined as negative physiological changes in our body.

9. **Due to what factors normal process of development is disturbed?**

Ans: The normal process of development is disturbed by abnormalities inherited from parents, abnormalities due to chromosomes or genes, environmental factors or metabolic defects.

10. **Define embryonic induction?**

Ans: The influence of notochordal cells on the ectodermal cells to become nervous system was **called** embryonic induction by Spemann.

11. **Differentiate between growth and development?**

Ans: Growth is the permanent and irreversible increase in size that occurs as an organism matures. While the progressive changes which are undergone before an organism become adult, constitute embryonic development.

12. **What is meristem?**

Ans: Meristems are young tissues or population of cells that retain the potential to divide.

13. **What is open growth?**

Ans: A plant has a growth pattern called open growth because throughout life, the plant adds new organs, such as branches, leaves and roots, enlarging from the tips of roots and shoots.

14. **What is Apical Meristem?**

Ans: The apical meristems are found at the tips of roots and shoot and are primarily concerned with the extension of plant body. These are perpetual growth zones found at the apices of roots and stems. They play important role in primary growth.

15. **What are Intercalary Meristems?**

Ans: These are the parts of apical meristem which get separated from apex by permanent tissues. They are situated at the bases of internodes in many plants. They play important role in the production of leaves and flower. These are of temporary nature.

16. **What are Lateral meristems?**

Ans: Lateral Meristems are cylinders of dividing cells present in dicots and gymnosperms. Vascular and cork cambium are the examples of lateral meristems. They play an important role in the increases in diameter of stem and root and are involved in secondary growth.

17. **Define differentiation?**

Ans: Differentiation is the formation of specialized tissues.

18. **What was the work of Thimann and Skoog?**

Ans: Thimann and Skoog in 1934 performed experiments and showed that apical dominance was caused by auxin diffusing from the apical bud.

19. **Differentiate between inhibitory and compensatory effects?**

Ans: Auxin released from apical bud inhibited the growth of lateral shoots or buds and it is **called** inhibitory effect. While the removal of apex releases the lateral buds from apical dominance. It is **called** compensatory effect.

20. **What is the temperature for incubation for chick egg?**

Ans: In incubating eggs artificially, the incubators are usually regulated at temperature between 36-38 degree centigrade. At this temperature, the chick completes development and is hatched on the twenty first day.

21. **Define Cleavage?**

Ans: The egg undergoes a series of mitotic divisions, **called cleavage**.

22. **What is Morula?**

Ans: Cleavage results in the formation of a rounded closely packed mass of blastomeres. This is **morula**.

23. **What is Blastula?**

Ans: The morula stage is short lived and soon changes into blastula and is characterized by the presence of a segmentation cavity or blastocoele.

24. **what is blastoderm?**

Ans: The discoidal cap of cells above the blastocoele is **called blastoderm**.



25. **What is zone of junction in developing chick embryo?**

Ans: The marginal area of the blastoderm in which the cells remain undetached from the yolk and closely adherent (supporting) to it is called the zone of junction.

26. **Define Gastrulation?**

Ans: It is characterized by the movement and rearrangement of cells in the embryo.

27. **Which two layers are formed from blastoderm during gastrulation?**

Ans: During gastrulation the blastoderm splits into two layers: an upper layer of cells called epiblast, and a lower layer of cells **called hypoblast**.

28. **What is area pellucida?**

Ans: The central cells of blastoderm can be separated from the yolk, under these central cells a pool of fluid develops, raising them off the yolk and giving the area a translucent appearance - the area pellucida.

29. **What is area opaca?**

Ans: The peripheral part of the blastoderm where the cells lie unseparated from the yolk is termed as area opaca.

30. **What is Primitive streak?**

Ans: In the chick the mesodermal cells migrate medially and caudally from both sides create a mid-line thickening called primitive streak. The primitive streak represents the dorsal and both lateral lips of blastopore.

31. **What is primitive node?**

Ans: The anterior end of the primitive streak is occupied by an aggregation - the primitive node or notochordal cells while rest of cells are mesodermal cells.

32. **What is Hensen's node?**

Ans: At the cephalic end of primitive streak, closely packed cells form a local thickening known as Hensen's node.

33. **What is Germ wall?**

Ans: In sections of embryo incubated from 18-20 hours, it is seen that ectoderm has spread and become organized into a coherent layer of cells merging peripherally with the yolk and the marginal area where the expanding germ layers merge with the under lying yolk is known as germ wall.

34. **What is gastrocoele?**

Ans: The cavity of the gastrula is called gastrocoele.

35. **How many layers, the lateral plate mesoderm is split-ting into?**

Ans: The lateral plate mesoderm is split-ting into two sheets like layers viz Somatic mesoderm and Splanchnic mesoderm with a space between them.

36. **What is coelom?**

Ans: The cavity formed between somatic and splanchnic mesoderm is **coelom**.

37. **What is Neurula?**

Ans: The whole process of formation of nervous system is called **neurulation**.

38. **How neural plate is formed?**

Ans: On the dorsal surface of gastrula, over the notochord, presumptive neural ectoderm is present in the form of a band. As gastrula elongates, the band thickens to form a neural plate.

39. **What is Neurula?**

Ans: In 24 hour chick embryos, the folding of neural plate is clearly visible. The embryo is now termed as neurula.

40. **How neural tube is formed in chick embryo?**

Ans: The neural plate sinks and the neural folds grow toward one another and meet in the mid dorsal line, fuse and convert the neural groove into neural tube.

41. What are neuropores?

Ans: At each end of neural tube, a small opening called anterior and posterior neuropores are also seen, which close later on.

42. What is neurocoel?

Ans: With the formation of neural tube, there is formation of central nervous system and the cavity enclosed is known as **neurocoel**.

43. What was work of Dietrich?

Ans: In 1892, Hans Dietrich, took sea urchin egg at two-cell stage, shook it apart and separated it into two cells. Later on, it was seen that both half embryos developed into normal larvae.

44. What is Acetabularia?

Ans: It is multicellular alga. It consists of rhizoid, which is attached to the grounds, from which arises a long stalk with an umbrella shaped cap at its top.

Two species of Acetabularia have been identified:

- ❖ Acetabularia mediterranea
- ❖ A. crenulata.

45. What is primary induction?

Ans: Spemann designated the dorsal lip area the primary organizer because it was the only tissue capable of inducing development of secondary embryo in the host. This was called **primary induction**.

46. Define regeneration?

Ans: The ability to regain or recover the lost or injured part of the body is called regeneration.

47. What are neoblasts?

Ans: In flatworms, and Planaria the unspecialized cells, called, neoblasts, are always present in the body of adult and are mobilized and migrate to the site of amputation (cut off), where they differentiate into specialized cell types.

48. Define abnormal development?

Ans: Sometimes, under unfavourable conditions, some parts of the body do not develop normally and this is called **abnormal development**.

49. Define Teratology?

Ans: Teratology is the branch of biology, which deals with these abnormal development and causes for such developments.

50. How normal process of development is disturbed?

Ans: **How normal process of development is disturbed:**

- ❖ Abnormalities Inherited from parents.
- ❖ Abnormalities due to chromosomes or genes.
- ❖ Environmental factors.
- ❖ Metabolic defects.

51. What are Teratogens?

Ans: Environmental factors causing or contributing to abnormal development are grouped together as teratogens e.g., ionizing radiations such as X rays.

52. **What is Microcephaly?**

Ans: It is a defect in which the Individuals are born with small skull.

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